

Dalila B.M.M. Fontes

fontes@fep.up.pt

Masood Fathi

masood.fathi@inesctec.pt

Faculdade de Economia and LIAAD - INESC TEC

Universidade do Porto

Rua Dr Roberto Frias 4200 - 464 Porto

Portugal

A Particle Swarm Optimization approach to the part-supplying problem at assembly lines

The Assembly Line Part-Supplying Problem concerns the delivery of parts to the workstations in a mixed-model assembly line. Here, we consider the problem of delivering the parts from a decentralized logistics area, through round trips. In order to provide the workstations with the needed parts, one has to decide which parts and respective amounts to load on each tour, while minimizing both the number of tours and the part inventories at the workstations. Limits are imposed on tour capacity and on storage capacity at the workstations. We propose a Particle Swarm Optimization algorithm to address this problem with a tour time additional constraint. The results obtained have shown the method to be efficient and effective.

Acknowledgments:

This work is partially funded by project "NORTE-07-0124-FEDER-000057", funded by the North Portugal Regional Operational Programme (ON.2 – O Novo Norte), under the National Strategic Reference Framework (NSRF), through the European Regional Development Fund (ERDF), and by national funds, through the Portuguese funding agency, Fundação para a Ciência e a Tecnologia (FCT).